

Xplor



SCHOOL'S
OUT!

THIS CATERPILLAR'S SUMMER
PLANS ARE SET TO TAKE FLIGHT

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Pull out this poster and tape it to your wall to make your room look wild.

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We recycle.

**You can, too! Share
Xplor with friends.**

In May and June, female eastern snapping turtles wander across roads while searching for places to lay their eggs. You can give turtles a brake by helping drivers watch out for these slow-moving mamas.

 by Noppadol Paothong

ON THE COVER

Monarch Caterpillar

by Noppadol Paothong

STRANGE BUT TRUE

Your guide to all the
UNUSUAL, UNIQUE,
AND **UNBELIEVABLE**
stuff that goes on in nature

Impressive pollywog: Most **AMERICAN BULLFROG TADPOLES** are 2 to 6 inches long, but some grow much larger. A bullfrog tadpole discovered in an Arizona lake measured 10 inches long and was as big around as a soda can!



Not only can a **YELLOW JACKET** sting over and over again, it can also spray venom. The venom burns an attacker's eyes and contains "alarm pheromones," which are special odors that rally other members of the hive to attack.

DUNG BEETLES may have nature's yuckiest job — they collect animal droppings for a living. But these six-legged poop-pushers are among the strongest animals alive. Some dung beetle species can push more than 1,000 times their body weight!



There's a reason to keep your **DUCKLINGS** in a row. Baby ducks often swim in an orderly line behind mom. This lets them ride waves in her wake like fluffy surfers, which requires less energy than if they were swimming alone.

Any **WHITE-MARKED TUSSOCK MOTH** fluttering around your porch light is definitely a male. Females can't fly. To attract mates, girl moths yell with smell. They release "perfumes" called pheromones, that lead boy moths right to them.



The amount of food gobbled up by **CAROLINA CHICKADEE CHICKS** may seem hard to, well, swallow.

Hardworking parent birds must gather 6,000 to 9,000 insects over the course of 14 to 19 days to raise a brood of five baby chickadees.



It's not just mama mammals that make milk. **MOURNING DOVES** (and a few other birds) make it too. Adults use their beaks to feed the milk to their babies. And unlike mammals, both male and female doves produce milk.



WHAT IS IT?

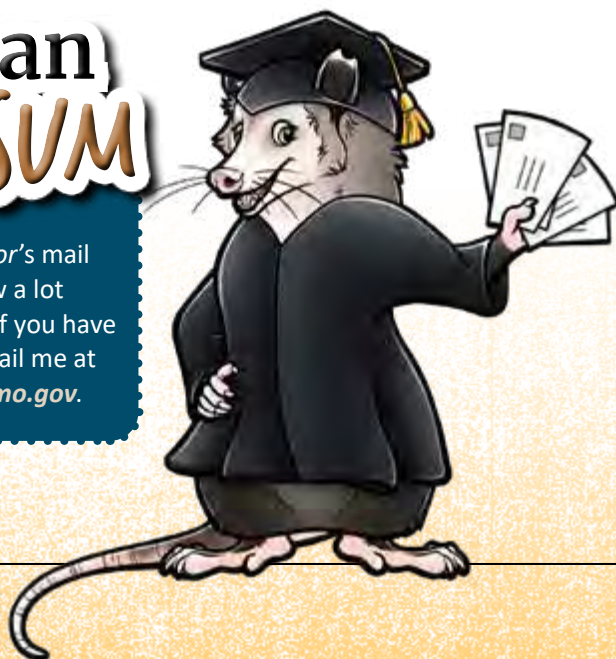
DON'T KNOW? Jump to page 21 to find out.

- 1 I rest in a coat of pearls and gold.
- 2 Until the day my wings unfold.
- 3 In prairies and fields I grow old.
- 4 I disappear when days turn cold.



Ask an OPOSSUM

Hi! I'm Phi, *Xplor*'s mail possum. I know a lot about nature. If you have a question, email me at AskPhi@mdc.mo.gov.



Q: Is a buzzard a species of bird or just a nickname for hawks and vultures?

— From Jett, age 12

A: In most of the world, a buzzard is a type of hawk. For example, common buzzards soar over Europe, jackal buzzards swoop through Africa, and upland buzzards hunt in Asia. In the U.S., we don't call our hawks buzzards. But some folks call bald-headed birds that eat roadkill, buzzards, even though they're technically called vultures.



TURKEY VULTURE

HOW TO

BAIT A HOOK

Forget all those fancy fishing lures. The easiest way to catch fish is to follow the K.I.S.S. Method: Keep it simple, skippy. Here are three simple ways to fill your stringer with only a hook and some bait.

KNOW THE RULES

Fishing doesn't have many rules, but it does have a few, and it's your job to follow them. Learn about permits, length limits, and other rules by picking up *A Summary of Missouri Fishing Regulations*. This free booklet is available at Conservation Department offices, bait shops, and online at mdc.mo.gov/fishing/regulations.

WORMS

When it comes to bait, a wiggly earthworm is tough to beat. It will catch panfish, like bluegill, and larger fish, like bass and catfish.

WHERE TO GET 'EM

Sure you can buy worms at bait shops, sporting goods stores, and even gas stations, but it's just as easy — and cheaper — to find your own. Look under layers of leaves in the woods. Or dig down into shady, damp soil. On rainy nights, you can even go outside with a flashlight and pick up worms right off of the sidewalk.

HOW TO USE 'EM

To keep worms wiggly — fish like them fresh — store them in a cool, dark container with a little damp soil. When you're ready to toss out your line, hook the worm several times so it makes a tight, squiggly ball. To make your worms last longer, you can pinch off a short section of a worm and thread it onto the hook.



MINNOWS

Crappie, bass, and many other big fish say “mmmmm” to minnows.

WHERE TO GET 'EM

It's easiest to buy minnows from a bait shop, but you can also catch your own. To learn how to build a minnow trap out of 2-liter plastic bottles, go to short.mdc.mo.gov/43v.

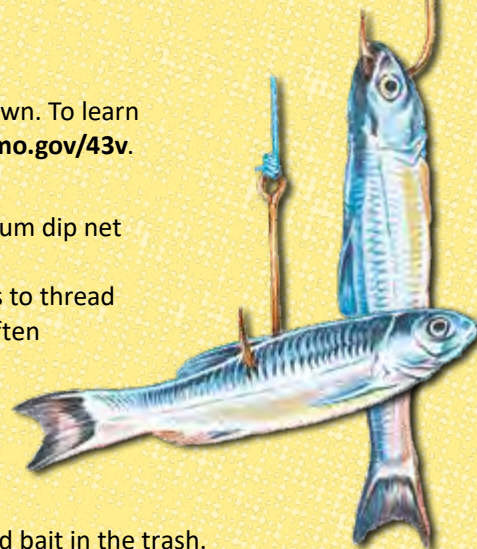
HOW TO USE 'EM

Keep your minnows in a bait bucket filled with cool, fresh water. An aquarium dip net is handy for catching the tiny, darting fish.

There are a couple good ways to put a minnow on a hook. The easiest is to thread the hook through the middle of the minnow's back. Since predatory fish often eat prey headfirst, some anglers think you'll miss fewer strikes by hooking the minnow through its mouth.

HEADS UP!

Never dump minnows in the water where you're fishing. Some kinds of minnows reproduce quickly and crowd out other fish. Always throw unused bait in the trash.



GRASSHOPPERS

Nothing makes a hungry fish happier than when a grasshopper falls into the water and lies twitching on the surface.

WHERE TO GET 'EM

Look for grasshoppers in pastures, fields, and grassy roadsides. You can catch them with a net (easy), a ball cap (harder), or your hands (hardest, but fun). Keep them in a coffee can or potato chip tube. Bang on the lid a few times before you open the can or all the hoppers you've caught will escape.

HOW TO USE 'EM

While holding the grasshopper firmly, thread the hook just behind the head so it comes out in front of the wings.



SUPER SENSES

Humans have five senses: sight, smell, taste, touch, and hearing. But our senses are pretty puny compared to some wild critters.



BUTTERFLY

What if your feet could taste your sweaty gym shoes? *Yuck!* Well, it's a good thing butterflies don't wear shoes because they have "tongues" on their toes. When a butterfly lands on a flower, its feet tell it in an instant whether there's nectar to sip or if the plant is a safe place to lay eggs.



TIMBER RATTLESNAKE

To beat summer's heat, timber rattlesnakes hunt at night. Finding dinner in the dark is easy. Like all of Missouri's venomous snakes, rattlesnakes have built-in night-vision goggles. Special organs in pits between their eyes and nostrils help them "see" heat from other animals. Even in complete darkness, a rattler can detect a mouse 2 feet away and strike with deadly accuracy.



BAT

Bats bag bugs by “seeing” with sound. As they fly, they send out high-pitched squeaks — up to 200 each second! By listening to the squeaks echo off objects, bats create a mental image of their surroundings so they can zero in on tasty moths and mosquitoes. The process, called echolocation (*eck-oh-loh-kay-shun*), is similar to the sonar that submarines use to navigate underwater.

BOBOLINK

If you’re lost, it helps to have a compass. Birds, which travel great distances during migration, have them built in. For example, bobolinks have tiny bits of metal in their beaks. Earth’s magnetic field tugs on the metal, which tells the feathered wanderer which direction it’s going. Biologists have found proteins in some birds’ eyes that might allow them to actually see Earth’s magnetic field — sort of like a heads-up GPS display in a fighter jet.



AMERICAN PADDLEFISH



So what’s with the big nose? Despite what you might think, an American paddlefish’s super-sized snout isn’t used for smell. Paddlefish eat tiny crustaceans, insects, and other animals that drift in the water as plankton. All living creatures — even tiny ones — emit weak electrical signals. A paddlefish’s snout acts like a TV antenna to detect those signals, which helps the fish zero in on clouds of yummy plankton.



CATFISH

Every millimeter of a catfish's skin, from its whiskery barbels to the tip of its tail, is covered with taste buds. If you were a catfish, you could taste a cookie just by touching it! But this sense-sational skin isn't made to savor flavors. It helps a catfish find food in dark, murky water.

LUNA MOTH

When a lady luna moth is looking for love, she releases powerful perfumes called pheromones (*fair-uh-mones*). If a male moth is nearby, he'll follow the scent. But he won't use his nose — moths don't have noses. Instead, he'll use his fancy, feathery antennas to track her down. And they work really well! The antennas are so sensitive, a male moth can "smell" a female 2 miles away.



AMERICAN KESTREL

American kestrels, like most birds, can see ultraviolet light. Voles — small rodents that kestrels love to gobble up for snacks — mark their trails through the grass with dribbles of urine. To humans, the urine is invisible. But because it reflects UV light, to a kestrel it looks like the neon sign at a diner, pointing the way toward dinner.



BUMBLEBEE

When a bumblebee flaps its wings, the fuzz on its body becomes charged with static electricity. A flower swaying in the wind takes on a static charge, too. So when the bee lands on the flower, it gets a tiny zap of static. (The same thing happens when you shuffle in socks across a carpet and touch a doorknob.) If the bee doesn't feel a zap, it knows another insect has already visited the flower. Shocking, huh?

SCORPION

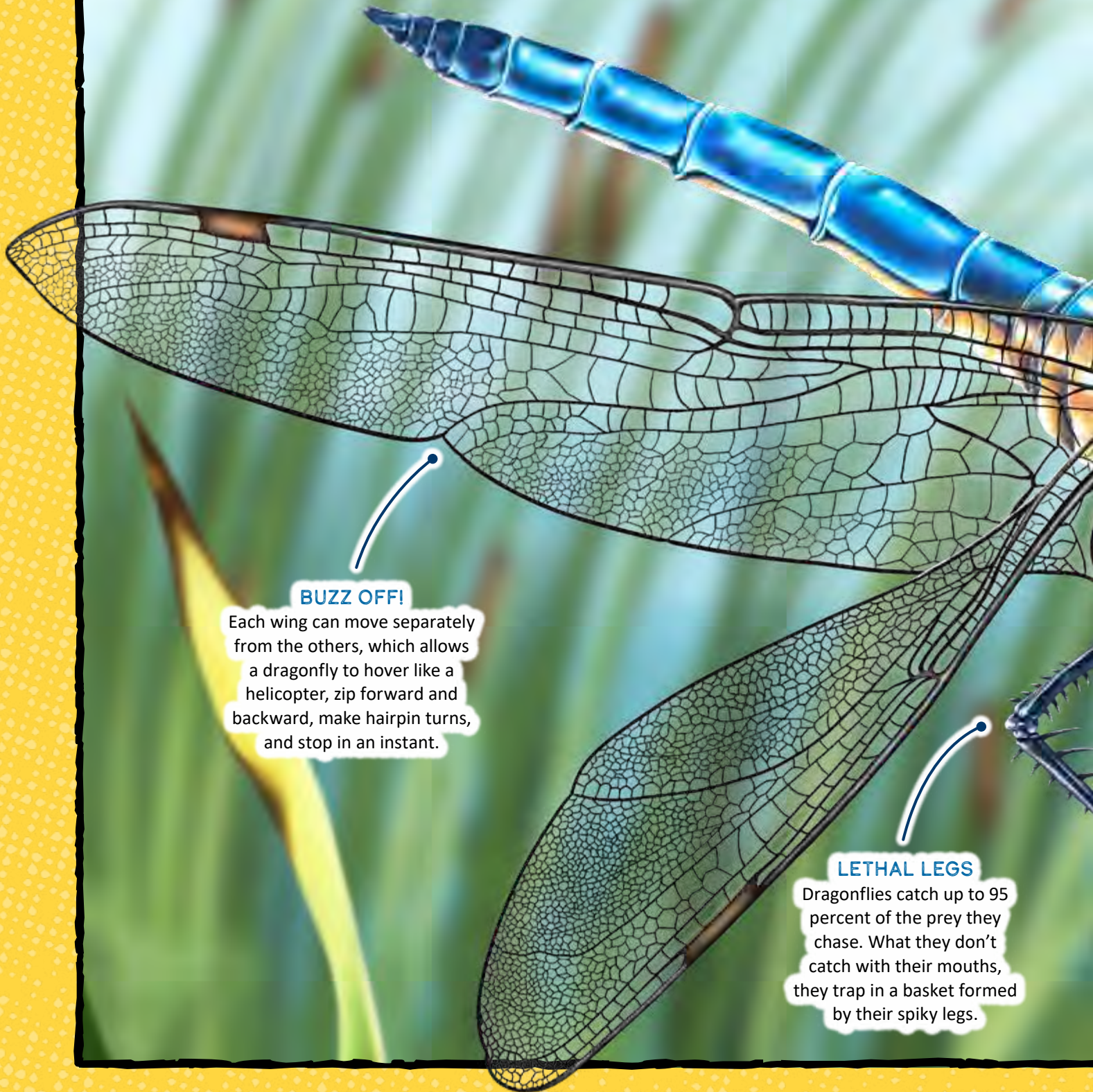
Who knew scorpions had a sensitive side? If you flip one over (we don't advise it), you'll find two comblike organs on its belly. These are called pectines (*peck-teens*), and they help a scorpion smell and taste its environment. In addition, sensitive hairs on a scorpion's pincers feel vibrations in the air. These extra organs are important. Even though scorpions have eyes on both their backs and heads, they can't see squat.



PRAIRIE LIZARD

Almost all animals with four legs have two eyes. But some amphibians and reptiles, like this prairie lizard, have three. The parietal (*pair-eye-it-uhl*) eye sits in the middle of the lizard's head and is covered with a scale. And though this third eye can't see anything, it's important. It sets the lizard's internal clock, tells the lizard's body when to produce important chemicals, and helps the lizard find its way around unfamiliar terrain by using the sun as a waypoint.

BLUE DASHER



BUZZ OFF!

Each wing can move separately from the others, which allows a dragonfly to hover like a helicopter, zip forward and backward, make hairpin turns, and stop in an instant.

LETHAL LEGS

Dragonflies catch up to 95 percent of the prey they chase. What they don't catch with their mouths, they trap in a basket formed by their spiky legs.



MUSCLE MOTOR

About half of a dragonfly's weight is made up of strong muscles that power its wings. Dragonflies can carry twice their weight while flying.

MIGHTY SIGHTY

Two huge, compound eyes are each covered with 10,000 to 30,000 "mini eyes." They help a dragonfly see in nearly all directions at once.

FEROCIOUS FEEDER

Toothed jaws catch, crunch, and munch mosquitoes, flies, and other small insects.



WHO'S WHO AT

Critter HIGH

art by Shannon Beaumont

Wild animals don't go to high school, of course. And they definitely don't have yearbooks. But what if they did? With the end of the school year on the horizon, we thought it would be fun to imagine who might be top of the class at Critter High.

An **EASTERN GRAY SQUIRREL**, which weighs about as much as a football, eats nearly 100 pounds of acorns and nuts every year.



Nuttiest
CLOWN



Likely
TO BE LATE

THREE-TOED BOX TURTLES move so S ... L ... O ... W ... L ... Y, they'd probably miss their own graduation. But they have time to go slow. They can live over 100 years.



Best
DRESSED

Male **PAINTED BUNTINGS** dress to impress. Like many boy birds, these fellas use their flashy feathers to charm the chicks.



DRAMA QUEEN

To lure predators away from its nest, a **KILLDEER** puts on quite an act. It pretends to have a broken bone, thrashing around and dragging its wing pitifully.

RANGERS JAZZ BAND

No sour notes here. Just sweet tweets and funky beats from this all-bird band.



PRINCIPAL'S PAL

RACCOONS are the critter most likely to wind up in the principal's office. With their nimble paws, they easily open coolers and trash cans to steal food.



VALEDICTORIAN

"Birdbrain" isn't an insult to an **AMERICAN CROW**. The brainy birds can count objects, use tools to gather food, and even tell one human from another.



Future **BUSINESS OWNER**

A **BEAVER** family is like a construction company. The buck-toothed builders use their razor-sharp teeth to cut down trees, which they use to build dens and dams.



Best **DINNER DATE**

A **COTTONTAIL** can raise 35 babies in a year. Luckily, plenty of predators keep rabbits in check. Foxes, bobcats, and hawks all have rabbit ragú on the menu.



RANGERS **FOOTBALL** **TEAM**

With an impenetrable offensive line, the undefeated Rangers football team had another savage season.



Best HAIR

RIVER OTTERS are fabulously furry. Each square inch of an otter's skin is covered with over 300,000 hairs!



ALWAYS ASLEEP

GROUND SQUIRRELS spend half their lives hibernating. The super-snoozers crawl into burrows in October, fall deeply asleep, and don't wake up until April.



RANGERS SCIENCE CLUB

Hoo knew feathers were so flammable? After weeks in rehab, Mr. Owl is once again flying high.



Cutest **COUPLE**

CANADA GEESE would win the vote for “couple most likely to stay together.” The loyal birds usually stay with the same mate throughout their long lives.



Worst **NICKNAME**

Missouri’s largest salamander, the **HELLBENDER**, has a terrible nickname. Due to their slippery, mucus-covered skin, some people call them “snot otters.”



Future **OLYMPIC MEDAL WINNER**

To escape danger or catch fleet-footed prey, a **COYOTE** can scurry in a hurry. Missouri’s fastest land animal can sprint short distances at 43 miles per hour.

*Never
change,
caterpillar!*



XPLOR MORE



Flashy Facts

Fireflies talk to each other with light. A male firefly's twinkling tush is like a neon sign. "Here I am," it blinks. "Do you like me?" Female fireflies blink back when they spot a male they fancy.

More than 150 kinds of fireflies live in North America. Many species live in the same place, so males and females need a way to pick out their own kind. That's why each species has a unique blinking pattern. For example, male big dipper fireflies light up for a solid half second while flying in a J-shaped pattern.

Some female fireflies copy the flash pattern of other females. When a male arrives hoping for love, the female *liar-fly* grabs him and eats him for supper. Sometimes, love hurts.

Crack the Code



Firefly Fun 1★2★3★flash

Lure a male big dipper firefly right to your fingertips by mimicking the female's flash. When you see a male finish his J-shaped flash, immediately count, "one Mississippi, two Mississippi, three," then flash a small LED light for half a second. Repeat until the male arrives.

Help!



Why did the firefly dump her boyfriend? The answer is hidden in this series of blinks. Use the key to crack the code.

Free the Right Fly

My mate's trapped. Can you find him? He looks like this.

This key is based on International Morse Code, which uses dots and dashes (short and long sounds or flashes of light) to communicate a message. Here, yellow circles represent dots and black circles represent dashes. Real fireflies don't use such a complex code.

A	●●	N	●●
B	●●●●	O	●●●●
C	●●●●	P	●●●●
D	●●●●	Q	●●●●
E	●	R	●●●
F	●●●●	S	●●●
G	●●●	T	●
H	●●●●	U	●●●
I	●●	V	●●●●
J	●●●●	W	●●●●
K	●●●●	X	●●●●
L	●●●●	Y	●●●●
M	●●	Z	●●●●

Crack the Code:
He was not very bright.
Free the Right Fly:
The upside-down fly at the
very bottom of the jar

GET OUT!

FUN THINGS TO DO
AND GREAT PLACES
TO DISCOVER NATURE



Red bat

SCAN THE SKIES at twilight, and you might spot the fluttering flight of a bat bagging bugs in your backyard. The winged mammals can catch and eat up to 1,000 small insects in an hour.



American robin

With **NESTING SEASON** at its peak, birds are working overtime to feed their babies. There's no harm in watching them, but keep your distance. If you get too close, you might keep them away from their chicks.



Listen for the **MUSICAL TRILLS OF GRAY TREEFROGS** on warm evenings. To find the well-camouflaged frogs, look around windows and porch lights. Treefrogs frequent these areas to feast on bugs attracted by the lights.



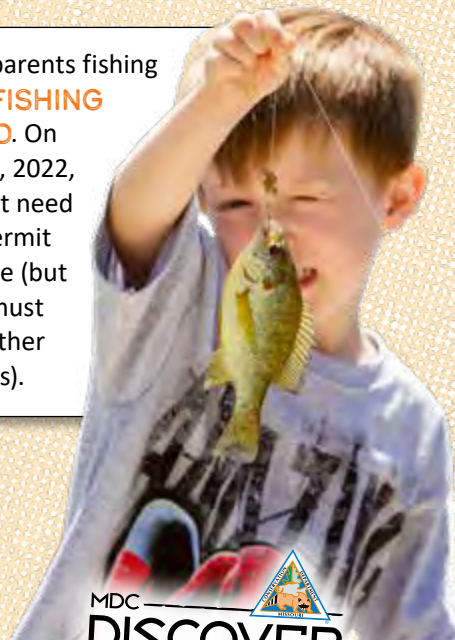
Pipevine swallowtail

BUILD A PUDDLE for a thirsty butterfly. Put some sand and rocks in a pie pan, add water, and set it in a sunny spot where butterflies can find it.

Gather your friends and grab a jar. It's time for a **BACKYARD BUG HUNT!** Who can catch the most colossal creepy-crawly? Or the most colorful? Of course, after you get a good look, release each bug where you found it.



Take your parents fishing on **FREE FISHING WEEKEND**. On June 11–12, 2022, adults don't need a fishing permit to wet a line (but everyone must follow all other fishing rules).



Looking for more ways to have fun outside? Find out about Discover Nature programs in your area at mdc.mo.gov/events.

MDC
**DISCOVER
nature**

**WHAT
IS
IT?**

— FROM PAGE 3 —



VARIEGATED FRITILLARY

A variegated fritillary caterpillar changes into a butterfly while wrapped in a pearl-colored chrysalis flecked with gold. The small, copper-colored butterfly that emerges can be found fluttering around prairies, fields, pastures, and roadsides from May through October. In the fall, some variegated fritillaries migrate south to spend winter in warmer places. They return in the spring to lay eggs, which hatch into spiky red caterpillars that munch on violets and mayapples.



BUTTERFLY: DONNA BROWNE

GO FIND IT!



Cut out this critter card and take it with you outside.
How many of the things on the card can you find?

THREE-TOED BOX TURTLE



GAZE INTO MY EYES

You can tell whether a box turtle is a boy or girl by looking at its eyes. Boys usually have reddish eyes. Girls usually have yellowish-brown eyes.

TOE-TALLY CONFUSING

Despite their name, not all three-toed box turtles have three toes on each hind foot. Some have four! And all have four toes on each front foot.

GIMME SHELL-TER

Thanks to a hinge on its bottom shell, a box turtle can tuck its legs and head inside its shell and close it up tight.

NOM, NOM, NOM

Adults eat mostly plants, berries, and mushrooms. During summer, they love to eat blackberries.

NIGHT NESTERS

Females lay eggs in June. They pick a sunlit patch of loose soil for their nest. Digging begins at dusk, and two to eight eggs are laid after dark.

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mdc.mo.gov/xplor

FREE TO MISSOURI HOUSEHOLDS

GO FIND IT! 

Three-toed box turtles are found in forests throughout Missouri except the northernmost counties. For more about box turtles, crawl over to mdc.mo.gov/field-guide.

THREE-TOED BOX-TURTLE

